

Diwakar Shukla

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SUMMARY

Masters of Engineering in Material Science and Engineering, driven engineering student with strong analytical, problem solving, and design skills. Experienced in research, technical communication, and hands-on project work. Eager to contribute to impactful solutions while growing in a collaborative, fast-paced environment.

EXPERIENCE

Co-Op, Universal Instruments

Aug 2025 - May 2026

- Developing potentiostatic electrochemical methods to quantify oxide content in gallium-based liquid metal thermal interface materials (TIMs).
- Correlating oxide content with thermal performance to improve reliability of next-generation electronics cooling solutions.
- Performed SEM imaging and XRD characterization on liquid gallium under different environmental conditions to evaluate oxide formation and correlate oxide content with TIM reliability.

Apprentice, Cornell NanoScale Science and Technology Facility (CNF)

Jan 2026 - Apr 2026

- Executed photolithography using SUSS MicroTec MA6 Mask Aligner and metal deposition using AJA Sputtering and Angstrom E-Beam Evaporation.
- Characterized electrical properties using Hall Effect Measurement System and Four-Point Probe.
- Performed thin film metrology using KLA-Tencor P-7 Stylus Profiler.

Quality assurance intern, Arora Iron & Steel Rolling mill

Jan 2024 - Jun 2024

- Worked and solved surface billet bloom defects (especially streaks occurring in rolled bars).
- Analyzed surface defects occurring in rolling mills (Seam Defects) by different NDT techniques like MPI, LPT, X ray and ultra sonic test.
- Worked and solved cases of Nitrogen pickup in SMS (Steel Making Shop). Worked closely with the Quality Assurance Manager and Senior Metallurgist to implement corrective measures, achieving a 25% improvement in mill efficiency.

Summer Intern, Mishra Boiler Pvt. Ltd.

Jun 2023 - Sep 2023

- Eliminated welding-related defects in AISI 304 stainless steel, reducing maintenance load by 30%.
- Replaced traditional welding with rivet-based edge joining in long stainless-steel plates using AutoCAD design and ABAQUS simulations, improving fabrication accuracy and structural integrity in the boiler body.

PROJECTS

Polymer Selection & Injection Molded Product Design:

Selected polymers using ANSYS Edu Pack, developed specifications, mold design, DFMEA, PFMEA, and durability testing strategy.

Synthesis and characterization of ferroelectric solid electrolytes for electrochemical cells:

Working on developing self-charging battery for medical usage like in pacemakers, the solid electrolytes on which we are working are $\text{Li}_{2.99}\text{Ba}_{0.005}\text{ClO}$ and Li_3ClO .

Microstructural evolution and mechanical properties of Fe-4Mn-1Si after server deformation:

With the help of UTM (Universal Testing Machine) calculated the yield strength (tensile and compressive) for heat treated sample.

Simulation using Abaqus:

Simulating air blast explosion using Smoothed particle hydrodynamics (SPH) explosion method and Coupled Eulerian Lagrangian (CEL) explosion method on various model such as Concrete damage plasticity (CDP), Johnson-cook, Johnson- Holmquist, ductile and shear damage model.

EDUCATION

Masters of Engineering, Material Science and Engineering

Aug 2025 - May 2026

Cornell University, Ithaca, NY

CGPA: 3.6/4

Bachelor of Technology, Metallurgical & Materials Engineering

Aug 2021 - May 2025

Punjab Engineering College, Chandigarh, India

CGPA: 7.5/10

SKILLS

Photolithography, SUSS MA6, AJA Sputtering, E-Beam Evaporation, Thin Film Deposition, Profilometry, Four-Point Probe, Hall Effect Measurement, KLA-Tencor P-7, Optical Microscopy, Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDS), Fourier Transform Infrared Spectroscopy (FTIR), Failure Analysis, Chemical Composition Analysis Corrosion

Course Work

Nanofabrication, Thin Film Deposition, Energy Storage, Materials Design, Computational Materials Science, Advanced Materials, Project Management, R For Data Analysis, Python basics